

PORTABLE WELDER GROUP 1 APR 20 REC'D FEB 07 03 JAN 2006

#### Technical Field

The present invention relates to a portable welder.

## Background Art

5       Covered-electrode arc welding is a manual welding method that has now been known and used for many years and utilizes the heat generated by an electric arc that forms between a consumable covered electrode and the parts to be welded.

Its widespread use is due to its great operating versatility, particularly  
10 to the possibility to provide joints in many welding positions and in any  
environment (indoors or outdoors).

Currently, the arc welders with covered electrode that are in use are mostly portable and comprise, depending on their size (and therefore their power), a welder body that is associated with the structure of a truck for movement or with the structure of a case.

Such welder body is constituted by a box-like body that contains a welding generator associated with cooling means; the welding generator is functionally connected, by means of connecting cables, to an electrode supporting clamp, to a ground clamp and to an electric power supply system.

A cable thus extends from the welder body and ends on the electrode supporting clamp, which can be handled by the operator in order to arrange the electrode proximate to the welding position, in contact with the part to be welded.

25 New technologies have allowed, in recent years, to reduce the weight  
and dimensions (at least for small- and medium-power welders) of the  
welder bodies, obtaining dimensions that allow to keep them attached to the  
shoulder of the user by means of shoulder straps.

Although flexibility in the ease of transport and use of such welders  
30 has increased considerably in recent years, such welders still have aspects

that can be improved.

For example, the welders must still always be "prepared" before welding. It is in fact necessary to connect the connecting cables from the generator to the electrode supporting clamp; once the welding work has 5 ended, the cables are disconnected and stored in an appropriately provided container together with the electrode supporting clamp.

If one considers welders with a truck structure, it is evident that the operating range of the electrode supporting clamp is limited to the length of the cable that connects it to the welder body.

10 Shoulder-carried portable welders avoid the problem of the operating range of the electrode supporting clamp, but can be awkward because in certain situations they can hinder the movements of the operator.

Moreover, every time it is necessary to change an operating parameter of the welding process, the operator has to use one hand (the other one is 15 busy with the electrode supporting clamp) to operate a switching button provided on the welder body, and it may be important to use said hand for other functions.

#### Disclosure of the Invention

The aim of the present invention is to provide a portable welder that 20 solves the drawbacks noted in known types.

Within this aim, an object of the present invention is to provide a portable welder that is compact and can be used easily by an operator in any working position.

This aim and this and other objects that will become better apparent 25 hereinafter are achieved by a portable welder comprising a box-like body that contains a welding generator associated with cooling means, said welding generator being functionally connected to an electrode supporting clamp, to a ground clamp and to an electric power supply system, said portable welder being characterized in that a handle for gripping and 30 orienting said welder protrudes from said box-like body, said electrode

supporting clamp being rigidly coupled to said handle.

#### Brief description of the Drawings

Further characteristics and advantages of the present invention will become better apparent from the following detailed description of a 5 preferred but not exclusive embodiment thereof, illustrated by way of nonlimiting example in the accompanying drawings, wherein the sole Figure is a partially sectional schematic view of the welder according to the invention.

#### Ways of carrying out the Invention

10 With reference to the figure, a portable welder according to the invention is generally designated by the reference numeral 10.

The portable welder 10 comprises a box-like body 11, which contains a welding generator 12 associated with cooling means 13.

15 The cooling means 13 are constituted for example by a motorized fan 14, which is fixed to the body 11 at an intake 15; a corresponding outlet 15a for the cooling air stream is formed in said body.

A handle 16 designed to allow an operator to grip and orientate the welder cantilevers out from the box-like body 11; in particular, in this embodiment the handle 16 is formed monolithically with the box-like body 20 11.

An electrode supporting clamp 17 is formed on the free end of the handle 16 and is functionally connected to the welding generator 12 by means of a first coupling 18.

In particular, the electrode supporting clamp 17 comprises a first jaw, 25 which is constituted by the handle 16, and a second jaw (not shown in the figure), which is pivoted to said handle.

Figure 1 also illustrates the electrode 17a, locked between the jaws of the clamp 17.

A ground clamp 20 is functionally connected to the welding generator 30 12 by means of a second coupling 19 that protrudes from the box-like body

11 and is designed to be fixed to the part to be welded, here designated by the reference numeral 21.

A third coupling 22 for connection to the electric power supply grid further extends from the welding generator 12.

5 A switch 23, such as for example a button 23a for switching the functions of the welder, is also functionally associated with the welding generator 12.

The slider button 23a is arranged externally on the box-like body 11.

Advantageously, in an alternative embodiment not shown in the  
10 figure, the switch 23 is arranged externally on the box-like body 11.

The welding generator 12 comprises an insulated AC/DC converter 24, with which an EMC filter 25 is associated; said converter and said filter are both of a type that is known in the field of welders.

15 The operation of the invention in terms of welding is simple and similar to all other welders.

From the point of view of practicality in work and easy handling, such welder is extremely effective: by holding the handle and the second jaw with a single hand, the electrode supporting clamp 17 is opened and the electrode 17a is inserted; the second jaw is released, while holding tight the  
20 handle 16; at this point, the ground clamp 20 is fixed onto the part 21 to be welded.

The entire welder 10 is thus moved by means of the handle 16 in order to arrange the end of the electrode on the welding position.

25 The welder is switched on by acting on the slider button 23a and the fan 14 starts operating in order to cool the generator 12.

All this occurs while holding the welder with just one hand.

In practice it has been found that the invention thus described solves the problems noted in known types of portable welder; in particular, the present invention provides a portable welder that is particularly compact and  
30 allows the entire welder to be held and controlled with a single hand, thus

avoiding the external connecting cables between the generator and the electrode supporting clamp and any inconvenience linked to the fact of having the welder far from the welding area.

In practice, the materials employed, so long as they are compatible  
5 with the specific use, as well as the dimensions, may be any according to requirements and to the state of the art.

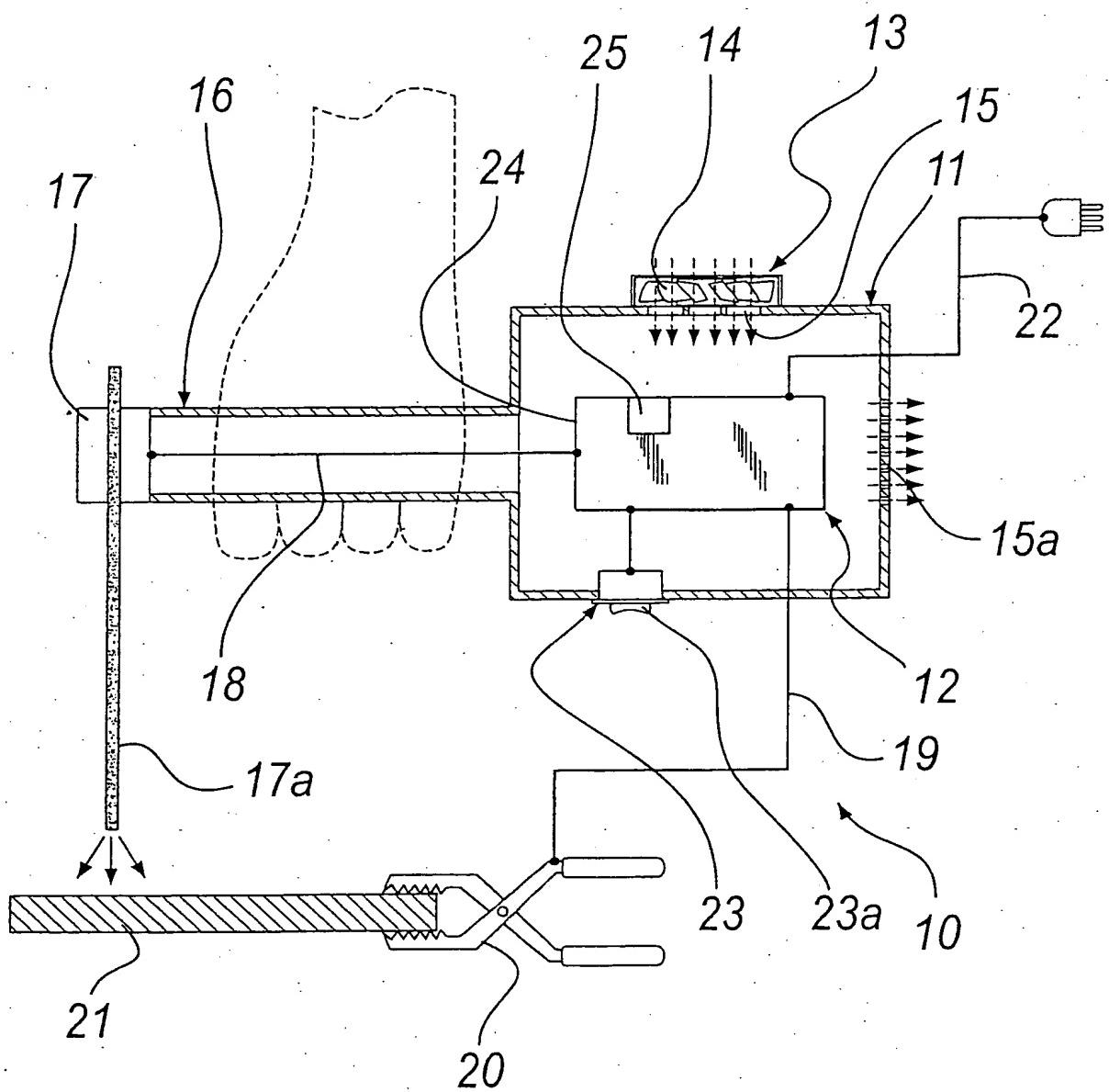
The disclosures in Italian Utility Model Application No. PD2003U000058 from which this application claims priority are incorporated herein by reference.

CLAIMS

1. A portable welder, comprising a box-like body (11) that contains a welding generator (12) functionally connected to an electrode supporting clamp (17), to a ground clamp (20) and to an electric power supply system,  
5 said portable welder (10) being characterized in that a handle (16) for gripping and orienting said welder (10) protrudes from said box-like body (11), said electrode supporting clamp (17) being rigidly coupled to said handle (16).
2. The welder according to claim 1, characterized in that said handle  
10 (16) cantilevers out from said box-like body (11), said electrode supporting clamp (17) being arranged on the free end of said handle (16).
3. The welder according to one or more of the preceding claims, characterized in that said electrode supporting clamp (17) comprises a jaw constituted by said handle (16) and a second jaw pivoted to said handle  
15 (16).
4. The welder according to one or more of the preceding claims, characterized in that said welding generator (12) comprises an insulated AC/DC converter (24) associated with an EMC filter (25).
5. The welder according to one or more of the preceding claims,  
20 characterized in that said welding generator is associated with cooling means (13).
6. The welder according to claim 5, characterized in that said cooling means (13) comprise a motorized fan (14), which is fixed to said body (11) at an intake (15), a corresponding outlet (15a) for the cooling air stream  
25 being formed in said body (11).
7. The welder according to one or more of the preceding claims, characterized in that a switch (23) for switching the functions of the welder (10) is functionally associated with said welding generator (12) and is arranged externally on said box-like body (11).
- 30 8. The welder according to one or more of claims 1 to 6, characterized

in that a switch (23) for switching the functions of the welder (10) is functionally associated with said welding generator (12) and is arranged externally on said handle (16).

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## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP2004/007322

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 B23K9/28 B23K9/32

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 B23K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 223 919 A (T F KELLER & SONS LIMITED) 18 April 1990 (1990-04-18)	1,2,4,5
Y	page 4, paragraph 5 – page 5, paragraph 1; figures	3,6-8
X	WO 91/15328 A (T F KELLER & SONS LIMITED) 17 October 1991 (1991-10-17)	1,2,4,5,
A	page 9, line 2 – page 13, line 6; figures 1,2,5	8 3,6,7
Y	US 2 424 437 A (W.R. DENT) 22 July 1947 (1947-07-22) figure 1	3
Y	US 6 074 296 A (C.-C. WU) 13 June 2000 (2000-06-13) abstract; figures	6
		-/-

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

## \* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
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\*&\* document member of the same patent family

Date of the actual completion of the international search  19 October 2004	Date of mailing of the international search report  26/10/2004
Name and mailing address of the ISA  European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer  Jeggy, T

## INTERNATIONAL SEARCH REPORT

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	US 2 683 791 A (H.E. RUEHLEMANN ET AL) 13 July 1954 (1954-07-13) the whole document	1-8
A	US 4 694 140 A (W.M. WHEELER ET AL) 15 September 1987 (1987-09-15) the whole document	3,6

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No

PCT/EP2004/007322

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